ABSTRACT

Elastomeric polymers are combined with chemical agents in the presence of supercritical fluids such as supercritical carbon dioxide by swelling the polymer with the supercritical fluid, and impregnating the swollen polymer with the chemical agent. The process can be conducted at relatively low temperatures and pressures such that degradation of the polymer or the chemical agent is avoided. The chemical agent is preferably a curing agent which includes functional groups that interact with functional groups on the polymer to create an association therebetween. The process is enhanced by pre-dissolving the chemical agent in a solvent which does not solubilize the polymer to a great extent, but which is itself soluble in the supercritical fluid. In addition, during combining, mechanical mastication is performed to create a free flowing powder.